THE MYCOPHILE

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President's Spotlight on Rose Tursi Pg. 2

Summary of Poisoning Reports Pg. 4

In Memorium: Nancy Smith Weber Pg. 11

Fruitful Connections Pg. 19

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PRESIDENT'S MESSAGE

Barbara Ching, *NAMA President*

According to the motto on our website, the North American Mycological Association is "promoting, pursuing and advancing the science of mycology." It doesn't say anything about the people who are doing these things, though. NAMA members, all volunteers, make everything we do in the name of mycology happen so in my next few President's columns, I'm giving them a spotlight, starting with Rose Tursi, the chairperson of our expanded arts committee—now encompassing arts, crafts, dye, fiber, and photography. Rose has had a booth in the vendor area of our recent forays so many of you may have met her and seen her work.

Let me know who else you think belongs in the spotlight!

Rose, which came first, the mushrooms or the art?

The art. I've always been an artist.

How and when did you get interested in mushrooms?

Mushrooms have always been in my life, even if it was somewhat peripherally for a long while. My grandfather and great uncle used to go foraging for gourmet mushrooms where I spent my early years, in New York. Unfortunately, my grandpa passed away when I was young, and my dad never felt confident enough with identification to go foraging on his own.

They were Italian immigrants and did everything the old way. We never knew the scientific names for anything. Actually we didn't even really know most of the common names. Stuff like *La etiporus* (Grandpa's favorite) was just "the best tree mushroom", puffballs were "wolf farts", etc. You know all those folk stories, like dropping the silver dollar in the pot of mushrooms? They believed in goofy stuff like that.

Then we moved to Southern California where mushroom foraging is not really part of the culture. There aren't many areas where you can go hunting for them. I still loved mushrooms, but my options were limited. I was the weirdo kid that always wanted mushroom pizza when all the other kids wanted plain or pepperoni. It might seem silly in retrospect, but playground arguments over preferred pizza toppings was a huge source of contention. I loved trips to the Asian grocery stores with dad, because they had unusual cultivated varieties – oysters, enoki and shiitake! For years, that was about as exotic and exciting as things got.

I'm enthralled by your prolific designs and creations. Can you tell us more about your development as an artist and the media you work with?

COVER PHOTO: Damask fabric print by Rose Tursi

That part is easy. I've always been crafty and creative, and I've always known that's what I wanted to do with my life. I was involved in every fine arts program available from grade school through high school, from drawing and painting to ceramics and metal casting and everything in between. My parents are crafty too. My mom worked for years as a sewing instructor for Bernina and my dad built model ships and stained-glass windows. When it was time to go to college, my family convinced me to at least focus on entertainment arts so that I'd have better job prospects. My degree concentrations are in animation and illustration, but I like to think of myself as a jack of all artistic trades.

When did you start incorporating mushrooms into your work?

My husband is in the Army, so we move around a lot. Our first two duty stations were Fort Irwin and Fort Huachuca – in the Mojave and Sonoran deserts, not a whole lot of mushrooms. But after that, we moved to Joint Base Lewis-McChord in Washington state. Mushrooms everywhere! I remember not long after moving, I walked outside and counted over a dozen species just on the front lawn. I realized I needed to learn everything I could about them. My parents came to visit soon after. Dad and I bought some ID books and spent the entire time in the woods observing mushrooms. It was great. Naturally, I started incorporating mushrooms into much of my art around that time.

You are also a writer – can you tell us more about that?

I've written and published several children's books and have been involved as the illustrator in several more. None of them have anything to do with mycology, but I have a few upcoming projects in the works that are mushroom related. I've just written one article for *Fungi Magazine*; a spotlight on the South Sound Mushroom Club. It appears in the 2020 Winter Special issue and is part of their ongoing series called Mycological Societies Forum. However, I've also been writing articles for the Wisconsin Mycological Society's quarterly newsletter. Now I'm working on a series about mushroom images that have gone viral on the internet, and the real stories behind them.

Many NAMA members have already met you at your vendor booth at our forays. How many NAMA-affiliated clubs do you belong to?

Right now I'm mainly involved in two clubs. I'm serving on the board of directors for WMS -the Wisconsin Mycological Society. My husband is in U.S. Army Recruiting Command, and we are stationed near Milwaukee. I'm still actively involved in the South Sound Mushroom Club in Olympia, WA. We bought property in Washington and hope to settle there permanently one day. I help manage SSMC's social media accounts since it's something I can do no matter where I'm at. I'm happy to say my parents have become active in the San Diego Mycological Society where they live. And of course, as you know, I am now the Visual Arts Committee Chair for NAMA.

Just one more question: What do you envision for the expanded arts committee?

Well, to update everyone reading - We've merged the Arts and Graphics, Photography, and Dyeing and Papermaking committees into one; now called the Visual Arts Committee. I was honored to be asked to serve as the new chair. NAMA already has an annual photography contest. I'm expanding that to include other visual arts categories. The committee is also facilitating graphics for promotional materials and merchandising, as well as organizing several art related workshops and lectures for the national foray. In addition, we are planning to host a solo art exhibition showcasing Dr. Theresa Kenney's series of mycological paintings. If it's successful, I would like to see it become an annual event- either with one featured artist or as a group exhibition. We have some openings. I'm seeking creative people from a variety of artistic backgrounds to fill out the committee. If you're interested, feel free to reach out.

Check out some of Rose's creations here:
https://tursiart.com/

Sculpture by Rose Tursi

EXECUTIVE SUMMARY OF THE POISONING REPORTS IN THE NAMA MUSHROOM POISONING CASE REGISTRY: 2018 THROUGH 2020

Abstracted from *McIlvainea* Volume 30 2021

By Michael W. Beug, PhD
Chair, NAMA Toxicology Committee

I have submitted a 24-page Toxicology Committee Poisoning Case report to *McIlvainea*. It covers the 3-year period from January 1, 2018 through December 2020. This summary for *The Mycophile* features the highlights from the report. The reporting is a volunteer effort. In addition, members of the toxicology committee work with Poison Centers to gather mushroom poisoning reports. The toxicology committee has 155 invaluable toxicology identifiers living in 36 states and 3 Canadian Provinces. Quebec, California, Oregon, and Washington each have more than a dozen volunteers. Mary Taylor provides the critical service of data entry into the NAMA database. The summary of human poisonings appears in Table I and the summary of animal poisonings appears in Table II.

In this report, the approach has been that of a "lumper." For example, *Armillaria mellea* and *Laetiporus sulphureus*, are now recognized as complexes of several

NAMA. Table I: Over-all summary of Human cases

Toxin or Poisoning Syndrome	Number of Cases	Notable observations
Amatoxins	10 cases	No deaths. One person survived eating ½ *Amanita bisporigera* and survived without treatment.
Isoxazoles	13 cases	Two young children escaped with no symptoms due to fast treatment. One adult consumed huge quantity and was treated with atropine and experienced respiratory failure – recovered after 8 days.
Psilocybin	7 cases	One probable anaphylactic shock. Two atypically severe cases involving purchased *Psilocybe* species that were likely adulterated. One young child promptly treated had no symptoms from *P. cyanescens* which can cause death in young children.
Orellanine	1 case	Second ever orellanine case reported in North America. Severe kidney damage.
Allenic norleucine chlorocrotylglycine	1 case + 1 possible	Violent poisoning. No mention of typical kidney damage. Always from *Amanita smithiana*
Bleeding	None	
Alcohol syndrome	None	Cases of possible alcohol reactions due to individual sensitivity recorded under gastro-intestinal cases.
Gyromitrin	None	
Muscarine	3 cases + 1 possible	One DEATH from a *Clitocybe* (from 2014). One gastrointestinal case where 1 *Clitocybe* may have been consumed. One severe gastrointestinal case where an *Inocybe* was consumed to get high. One young child case involving part of an *Inocybe*, prompt treatment, and no symptoms.
Contamination by *Listeria*	1 shipment	4 DEATHS, 31 hospitalized in 17 states
Gastrointestinal and/or shock	130 cases	Many lessons here but the most important is that some people can become sensitive to a mushroom that they have eaten for years. Repeated ingestions of that species can lead to increasing severity of symptoms. Historically has caused deaths from anaphylactic shock.

Table II: Over-all summary of Animal cases

Toxin or Poisoning Syndrome	Number of Cases	Notable observations
Amatoxins	15 cases 25 dogs	20 DEATHS, 2 recovery (one from *Amanita phalloides,* one from *Lepiota subincarnata).* Rest largely unknown outcome
Isoxazoles	11 cases 11 dogs + 3 ducks	3 DEATHS (all dogs). First mushroom poisoning report of any kind involving ducks. Duck symptoms typical for isoxazole poisoning, 24 hour recovery.
Muscarine	12 cases 15 dogs	2 Deaths.
Psilocybin	none	Dogs are known to seek out and consume *Psilocybe* mushrooms.
Gyromitrin	2 cases	1 DEATH
Gastrointestinal`	18 cases 19 dogs	3 Deaths. Two deaths from unknown toxins in *Saproamanita thiersii.* One death from probable *Panaeolus foenisecii.*

species, but there has often been no way to figure out what the actual culprit was, though by looking at the location one can sometimes make a good guess. Within a group of easily confused species, some species are far more toxic than others. Another confounding factor is that mushrooms can be contaminated by bacteria and molds and the symptoms from bacterial and mold contamination are extremely similar to most mushroom poisoning symptoms. I report one notable incident where *Listeria* on packaged imported Enoki mushrooms resulted in 36 illnesses and 4 deaths in 17 states. Other cases certainly do appear to have been a result of consumption of spoiled mushrooms that were old before consumption or had been frozen raw (which allows the bacteria to keep growing). Also, for mushrooms growing in lawns, flower beds, along roads and on golf courses there is the question of contamination by insecticides, herbicides, or heavy metals. All mushrooms will take up toxic chemicals, most at concentrations reflective of the general environment. A few species, hyperaccumulate toxins and so pose a special risk in contaminated environments. The toxicity of some species can vary significantly depending on mushroom age, part of the mushroom consumed, preparation method, specific habitat (woods versus lawns), and even elevation (examples include *Amanita muscaria, Gyromitra esculenta, Psilocybe cubensis, etc.*).

Figure 1. *Shiitake flagellate dermatitis*

I have tabulated all the reported dermatitis cases because that information has remained scattered. Cases of flagellate dermatitis caused by raw or undercooked *Lentinula edodes* remain common. Figure 1 shows the photo of a woman's back a week after she consumed some under-cooked shiitake. A few individuals suffered gastrointestinal distress from cooked shiitake. Indeed, I have not yet encountered a single "edible" mushroom that has not caused distress for some people. Conversely, sometimes someone gets away with eating a very poisonous species.

For cases of gastrointestinal upset, the *McIlvainea* report contains three tables – one for cooked mushrooms, a separate table for raw, undercooked, spoiled mushrooms, and a third table for mixed collections. In each table I indicate what species was identified as the culprit, when and where the poisoning occurred, the sex and age of the victim, the delay in onset of symptoms, how much was consumed (if known), how was it prepared (if known), the symptoms, treatment and outcome.

While I still sometimes see 50% quoted as a death rate for consumption of mushrooms containing amatoxins, and the death rate remains in that range throughout the poorer countries of the world, I calculated an 11% death rate for reported cases of people who became ill during the first thirty plus years of maintaining the NAMA database covering the period 1975 though 2005 plus scattered earlier reports (Beug *et al.* 2006). Furthermore, there were five liver transplants for a transplant rate of 3.5% in amatoxin cases from 1975 through 2005. In the period from 2006 through 2017, I believe that the death and transplant rates decreased, but the data is too fragmentary to be certain. Since 2017, my information about amatoxin cases has become even more spotty, though from 2018 through 2020, there were 9 reports involving 6 different amatoxin containing species, including the first confirmed case from *Lepiota lilacina.*

Figure 2. *Cortinarius rubellus,* M. Beug

Orellanine, the other deadly mycotoxin in mushrooms that people eat, was involved in one incident involving *Cortinarius rubellus. C. rubellus* (Figure 2) has caused many poisonings in Europe, though this is the first known case for North America. Orellanine, found in one other North American *Cortinarius* species,

Cortinarius orellanosus, resulted in one poisoning case reported a few years ago. *C. rubellus* is uncommon and is most often found in or near sphagnum bogs across the northern half of North America. *C. orellanosus* is very similar in appearance but is associated with hardwoods in eastern North America. They are commonly mistaken for Chanterelles and have even been mistaken for *Boletus edulis*! Orellanine poisoning is characterized by a long latent period (often more than 1 week) followed by kidney failure. Orellanine glows under uv light (a little LED uv flashlight used for hunting scorpion is fun for seeing which mushrooms are uv active).

Figure 3. *Amanita smithiana,* M. Beug

There were no reported deaths from another species of mushroom noted for causing kidney failure, the western species, *Amanita smithiana* (Figure 3) which is commonly mistaken for Matsutake. Though *Amanita smithiana* was at one time thought to contain orellanine, orellanine is not present. A toxin in A*manita smithiana* is allenic norleucine that is probably bound to a sugar in the mushroom. A second compound, chlorocrotylglycine, is also toxic. To date, I know of no deaths from *Amanita smithiana* and after a few months, kidney function is largely recovered.

Though many people still eat *Gyromitra esculenta*, the large number of cases found in the past where there was liver and/or kidney damage (and many deaths in Europe) hopefully may lead individuals to cease this practice. Gyromitrin, the toxin in *Gyromitra esculenta, Gyromitra infula* and *Gyromitra ambigua* is also known to be highly carcinogenic, though highly variable in concentration in the mushrooms. No new human gyromitrin cases were reported.

Figure 4. *Entoloma lividoalbum forma inordoratum,* M. Beug

I have long cited the severity of the poisoning symptoms from consumption of some (but not all) species in the *Entolomataceae.* The toxins involved are unknown and I had no recollection of any reports of people having eaten an *Entoloma* (including *Nolanea, Alboleptonia,* and *Leptonia*). In 2020, I personally dealt with one case of ingestion of a large *Entoloma* in the *E. lividum* group (Figure 4) and one case involving ingestion of a small amount of a *Nolanea* resembling *Nolanea sericea.* Both cases involved very serious symptoms requiring hospitalization. The *N. sericea* case involved liver damage, even though the amount believed to have been ingested was small. The large *Entoloma* was mistaken for a "fawn mushroom", though they are usually mistaken for members of the *Lyophyllum multiceps* complex, the "fried chicken mushrooms" – which do not taste anything like fried chicken, and I would not eat anyway.

The strangest case in the past three years is a very recent case where the patient made a tea from *Psilocybe cubensis* and injected the tea into his arm. It was a psilocybin micro dosing attempt gone very wrong. He survived after many days in the intensive care unit followed by three weeks in the hospital. He needs ongoing treatment. Cultures of his blood revealed bacterial growth and *Psilocybe cubensis* was cultured from his blood (from circulating spores?).

In addition to the individual reports on which the human cases are based, I have one summary report from the California Poison Control covering 2017 that gives one an over-all sense of the number of cases a large Poison Center might have to deal with in a year. They had 1,038 mushroom ingestion calls. Of those 522 were treated at a health care facility. Of those treated, 16 suffered a major health issue including one liver failure leading to coma. Any of those cases that had been sent to NAMA would have shown up in my 2017 report. None are included here.

For many years now, Paul Kroeger, one the BC NAMA toxicology identifiers, has kept track of where *Amanita phalloides* is growing in the Vancouver B.C. area. He has a teamof volunteers who strive to locate and remove all fruitings before a dog or a human gets poisoned. Paul has developed a close working relationship with Raymond Li and the British Columbia Poison Center. They have provided a summary of the 39 symptomatic cases that they have dealt with for the period 2017-2020. Wherever possible, they have collected vouchers for symptomatic cases. When Covid dies down and life begins to return to normal, Dr. Mary Berbee will do the DNA analysis. Paul noted that the most frequent asymptomatic calls to the poison center resulted from consumption of *Leucoagaricus* (6) and *Paneolina/Panaeolus* (5). Paul reports that "there were also a tedious number of possible exposure cases where viewing photos allowed us to identify *Agrocybe praecox* or *A. pediades*, *Leucoagaricus leucothites*, *Marasmius oreades* or *Panaeolus foenisecii* (*Paneolina foenisecii*). Public awareness efforts warning of Death Cap mushrooms in urban settings resulted in many of these calls to DPIC".

For the first time ever, the winner of the award for the mushroom causing the most reported cases (9) goes to *Agaricus bisporus* in one of its many manifestations – "crimini", "baby bellas", "portobellos", or simply "button mushrooms". Second place goes to morels as a group (6). Morels are normally at or near the top of the list. There are 7 reports of adverse reactions from "chaga", usually consumed as a tea. However, the large number for "chaga" is due to intense scrutiny over multiple years. Normal reporting would have resulted in only two reports of an adverse "chaga" reaction. Do not assume much from the large number of "chaga" cases, but do observe some of the things people do to get themselves in trouble, like drinking old, moldy tea.

"Edible" mushrooms with a significant number of adverse events include *Leccinum* species (6), *Sutorius* (*Tylopilus*) *eximius* (4), *Armillaria mellea* complex (4), *Grifola frondosa* (4), *Hypomyces lactiflorum* (3); *Laetiporus sulphureus* and relatives (4); *Cantharellus* species (5). The severity of some of the adverse reactions with *Leccinum, Sutorius, Armillaria, Hypomyces,* and *Laetiporus* has resulted in my decision not to eat any of these species. I remain undecided about *Grifola.* I do not hesitate to eat chanterelles. Morels (which are poisonous raw) must be well-cooked. Indeed, many of the adverse reactions to any edible mushroom result from under cooking and I recommend thorough cooking for all mushrooms. It is also becoming clear that with *Leccinum* species, *Morchella* species and several other edible species, individuals can develop a sensitivity over time. Once sensitized, further meals lead to ever stronger adverse reactions. Thus, if you have had a bad experience with an edible mushroom, be very careful should you try the mushroom again. However, becoming sensitive to one mushroom does not mean you need to avoid all mushrooms.

The "poisonous" mushroom that normally leads the pack for all mushroom poisonings is *Chlorophyllum molybdites.* The four people who consumed this mushroom raw discovered that it can cause very violent poisoning including bloody vomit and bloody diarrhea. Even cooked, two people discovered that *C. molybdites* is trouble.

This report contains the first record of a human death due to muscarine (a *Clitocybe* species). It also has one report of a very serious human case where atropine was used in an *Amanita muscaria* poisoning.

Adverse reactions from *Psilocybe* species were, as usual, very under reported (7 case reports). In the right set and setting, consumption of psilocybin and psilocin can have exceptional medical benefits. I have been present at numerous psychedelic mushroom conferences where *Psilocybe* mushrooms were consumed. While events involving alcohol can be very boisterous and sometimes turn violent, even deadly, events involving psilocybin are very quiet and peaceful. In hundreds of cases where I have observed *Psilocybe* use, I have never observed a "bad trip" (and yes, on all but one occasion, I was simply an observer). However, misuse can have significant adverse consequences. In one example, a "bemushroomed" individual consumed an assortment of small brown *Entoloma* species and was severely poisoned. In a second incident, the individual experienced temporary paralysis, but fortunately was in a safe location and so no long-term harm resulted. The information from Paul Kroeger and Raymond Li about cases handled by the B.C. Poison Center illustrates that poison centers regularly deal with "bad trips". In two B.C. cases and one other Canadian case, two involving purchased *Psilocybe cubensis* and one involving purchased *Psilocybe cyanescens*, the symptoms do not match what I would expect from

a simple "bad trip", but lead me to suspect that the purchased mushrooms had been adulterated with additional, more dangerous, psychoactive substances.

In examining animal poisoning cases, I continue to be struck by how frequently dogs (rarely cats) consume either *Amanita muscaria* or *Amanita pantherina*. Neither of these species is deadly in humans, but both can be lethal to cats and sometimes to dogs as well. For the first time, we also had a report of birds who consumed *Amanita pantherina*. Three domestic black ducks consumed the mushrooms in the morning and soon were suffering the same symptoms one observes in humans and dogs. The next morning when the owner checked on the ducks, expecting to have to get them euthanized, they were all fully recovered. The main toxins are ibotenic acid and muscimol. A confounding factor in treating cases involving *Amanita pantherina* and *Amanita muscaria* (as well as several other closely related species) is that they also contain some muscarine, which produces PSL symptoms (including perspiration, salivation and lachrymation, pinpoint, versus dilated pupils). Muscarine poisoning is counteracted by careful use of another toxin, atropine. However, atropine intensifies the toxicity of ibotenic acid and muscimol and its use can then lead to death if ibotenic acid or muscimol is present. In one case report involving a human, I suspect atropine made matters much worse. In dogs who have consumed *Amanita muscaria* or *Amanita pantherina*, there was at least one death where atropine use was involved.

Dog deaths from consumption of mushrooms containing amatoxins remain a critical problem. Survival of a dog after consumption of amatoxins is rare, but not unknown. A ray of hope comes from a recent report, "Clinical recovery of 5 dogs from amatoxin poisoning using an adapted Santa Cruz protocol for people" (R.C. Goupil, 2021). The report from BC of a famous movie star dog surviving consumption of *Amanita phalloides* can probably also be credited to the use of the "Santa Cruz protocol". However, in the one other recent dog case involving use of a biliary drain, the puppy died.

There were deaths of dogs from *Clitocybe* and *Inocybe* species due to muscarine.

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A RARE *CORTINARIUS RUBELLUS* POISONING FROM QUÉBEC

by Debbie Viess

In August 2020 a Québécois mushroom hunter made a serious mistake. Searching a sphagnum bog in a black spruce woods, he picked five unknown, attractive reddish mushrooms. He ate them later that night as part of his supper.

A day or two later, he developed mild gastrointestinal (GI) symptoms and off-tastes to certain foods, which persisted. He resisted going to hospital due to concerns over COVID. After 18 days of worsening symptoms, he finally went to his local hospital, and was diagnosed with acute kidney failure. He felt better after several days of IV fluid therapy, well enough to briefly return home.

On his way back to the hospital, he stopped by that same bog and picked more of the same reddish mushrooms to show his physician, Dr. Marilyn T. Duravage. She photographed the specimens and contacted the POISONS group on Facebook (Poisons Help; Emergency Identification For Mushrooms & Plants). A consensus of online expert identifiers encouraged

her to treat it as an orellanine poisoning. The specimens were then brought to Patrice Dauzet, an experienced microscopist with Le Cercel des Mycologues de Montreal, a NAMA affiliated club. He identified them as *Cortinarius rubellus*, one of two deadly Web Caps found in North America. (Deprés, 2020)

During the course of this poisoning, the patient experienced mild GI discomfort, fatigue, pain in the lower back, headaches, lack of appetite and eventually acute renal failure. There was improvement during his hospital stay following intravenous rehydration, but it is unknown whether or not he will recover full kidney function. His physician continues to treat him on an outpatient basis, and is in process of writing up her own account of this poisoning. This case is only the second orellanine poisoning documented from North America.

The first North American orellanine poisoning was recorded in western Michigan in 2010, with an at-the-time unknown species of *Cortinarius* in section *Orellanii: Cortinarius orellanosus*. Its umbonate, matted fibrillose cap, which can split at maturity, is a uniform orange-brown to reddish brown, with a pale yellow to ochraceus banded stipe. Similar to the European *C. orellanus* in cap color, many microscopic features and hardwood host, *C. orellanosus* was separated due to significant genetic differences.

Cortinarius rubellus is found in northern latitudes around the world. It grows with conifers in subalpine forests, and is frequently found in moss. In North America, *C. rubellus* has been documented from British Columbia, Western Washington, Québec, Alaska and possibly Maine. It is a medium sized mushroom in *Cortinarius* section *Orellanii*, with a dry, matted fibrillose, peaked to umbonate cap, with uniform reddish to red-orange coloration. Its stem is similarly colored, often with bands, club shaped to slightly enlarged in the center. This species can have a radish-like odor.

C. rubellus and *C. orellanosus* are the only two orellanine containing *Cortinarius* species in North America, and both are restricted in range to northern latitudes, and subalpine conifer and temperate forests. These orellanine containing species have a distinctive aspect, but could possibly be mistaken for *Cortinarius* in section *Telemonia*, section *Dermocybe*, or section *Brunnei (C. gentilis)*. It's best to avoid collecting for the table any and all *Cortinarius* species that look even remotely like these. In fact, best to not pick and eat any wild mushrooms that you don't know well; some have even managed to mistake orellanine containing corts for chanterelles!

Other than these two very serious orellanine poisonings, and despite the fact that there are many hundreds of *Cortinarius* species, we have a surprising dearth of North American *Cortinarius* poisonings. Michael Beug, Chair of the NAMA Toxicology Committee, has this to say, "This [*Cortinarius*] is far and away the largest genus with far and away the smallest number of reports of toxicity." Other than two inconsequential examples in the NAMA poisoning database (*C. violaceus, C. semisanguineus*), there have been no reports of poisonings with *Cortinarius*.

Although few people in North America eat *Cortinarius*, they are broadly eaten around the world. The United Nations F.A.O. document on Wild Edible Fungi (Boa, 2005), lists 16 species of *Cortinarius* eaten worldwide; there are undoubtedly more. Charles McIlvaine, a paragon of gustatory experimentation, documented 20 *Cortinarius* species that he had personally eaten, in his groundbreaking book "One Thousand American Fungi." Featured edible North American *Cortinarius* included *C. armillatus, C. violaceus, C. squamulosus, C. turmalis, C. varius, C. purpurascens, C. caerulescens* and *C. iodes*. A few of these got high marks for culinary appeal, but in most cases he was underwhelmed by their flavor and/or texture. Many were praised for merely being an abundant food source, regardless of their palatability.

For more details on this case and specifics on *Cortinarius* toxicity, see my companion article in McIlvainea: "A rare *Cortinarius rubellus* poisoning and some thoughts about our attitudes about *Cortinarius* in general."

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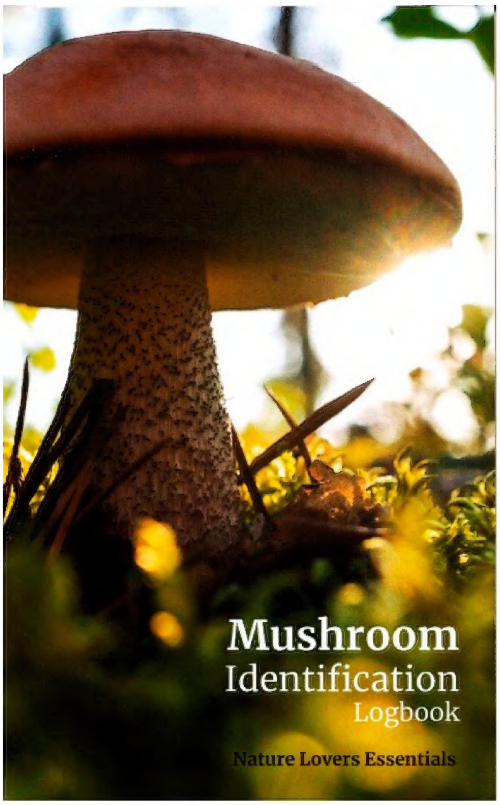
MUSHROOM IDENTIFICATION LOGBOOK: A GUIDED RECORD BOOK FOR THE WILD MUSHROOM HUNTER

Book Review by Steve Trudell



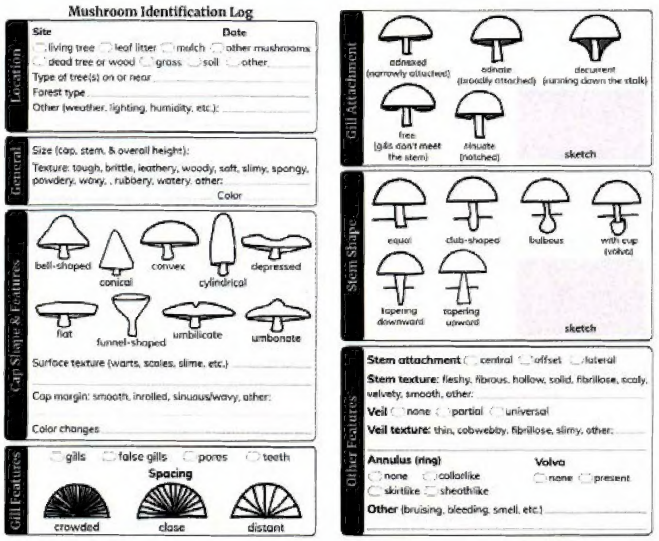
Mushroom Identification Logbook:
A guided record book for the wild mushroom hunter
Elisa Malik / Nature Lovers Essentials (2019)
ISBN: 978-1698819273
amazon.com/author/natureloversessentials
$9.99

Learning to recognize the most popular edible wild mushrooms—morels, king bolete, golden chanterelles, shaggy mane, and oysters—is easy. One of the reasons they are popular is that they are distinctive enough to be learned easily. But it's a whole different ballgame if you want to identify all, or even a major portion, of the mushrooms you find; it's a lot of work and the learning process can be very frustrating at times.

When teaching mushroom identification classes, I stress the importance of learning the jargon (it enables you to communicate effectively with knowledgeable folks) and taking time to carefully observe your mushrooms before opening a book or browser to look at pictures or dive into keys. The necessary first step is for you to appreciate the often subtle characters that make that mushroom (species) different from all the others.

This book provides an illustrated checklist of many of the basic macroscopic features that are used to describe mushrooms, along with lists or blanks for things such as location, substrate, and habitat. No microscopic features are included. The need to decide which boxes to check and how to fill in blanks will force you to look at your mushrooms more carefully than you otherwise might. Equally, or even more, important is to make a drawing of your mushrooms—unfortunately there is no room for whole-mushroom drawings so augmenting this book with some sort of journal would be necessary.

The book is best suited to beginners—it covers a lot of the basics (but surprisingly not spore color) and is easy to use. However, more experienced folks will outgrow it as it provides no room for recording many of the myriad features that, in some cases, are important, such as color when the different parts (cap-gills-stipe) are not all the same, whether the mushrooms "bleed" latex and, if so, what color it is and whether that changes over time, the specific nature of the volva in an amanita, not just whether it has one, and whether the gills are all the same length or whether partial gills occur between "whole" gills. A single form that covered every possible thing that might be needed would be overly cumbersome, which is why folks have developed specialized checklists for different genera such as *Russula* and *Hebeloma* (see *The Mycophile* September-October 2016 for an example).



If you're just starting out with learning mushroom ID, this would help you to develop good habits. Just be sure to draw your mushrooms as you check the boxes and fill in the blanks.

~ *In Memorium* ~

NANCY SMITH WEBER

MARCH 12, 1943 TO DECEMBER 19, 2020

AND IN HONOR OF THOSE WOMEN WHO CAME BEFORE HER AS WELL THOSE WHO CONTINUE

By Michael W. Beug, Professor Emeritus
The Evergreen State College – Olympia, WA

I first learned of Nancy's passing on January 2, 2021 and spent a sleepless night thinking about her and how we came to meet and share a passion for mycology. I had just read the beautiful Winter 2020 Fungi Magazine Special Edition: Women of Mycology. I did not think I had anything to add to those stories, but as I tossed and turned through the night I reflected on the women who influenced my transformation from a physical scientist with a PhD in chemistry and not a shred of training in the biological sciences, to an organic gardener/mycologist dedicated to field natural history.

In April of 1971, I was wrapping up my PhD in chemistry at the University of Washington as unbeknown to me, Nancy Smith Weber was completing her PhD in botany at the University of Michigan after marrying her husband Jim Weber on April 19, 1970. I had married my chemist wife, Ann, in 1968 and in 1969 we were given some morels. I did not like store-bought mushrooms and had never noticed mushrooms in the wild except to sometimes stomp puffballs. But the morels were sooo delicious (Nancy shared the morel fascination, as I later learned when she wrote a book about them). Ann and I went out mushroom hunting and picked two grocery bags of gorgeous large red mushrooms with whitish warts on the cap. Back at the University of Washington, I tried to get the mushrooms identified but for a full day, could find no one who knew what we had found. We heard about Dr. Daniel Stuntz, who had just founded the Puget Sound Mycological Society along with Ben Woo, a local architect and Dr. Dixie Lee Ray, a fisheries biologist, former head of the Atomic Energy Commission and future Washington State Governor. Dixie was then head of the Pacific Science Center at the site of the 1962 World's fair. While we did not join PSMS, Ann and I helped with and attended one of their first mushroom shows at the Pacific Science Center and took a non-credit evening mushroom class taught by Dr. Daniel Stuntz and a Seattle schoolteacher, Coleman Leuthy. Our passion for mushrooms blossomed, but our knowledge was scanty. We purchased the only two books that seemed useful – The Mushroom Hunter's Field Guide by Nancy's father, Dr. Alexander H. Smith from the University of Michigan and The Savory Wild Mushroom by Margaret McKenny and Dr. Stuntz.

In April of 1971, I was headed for Industry. A few months earlier, my thesis advisor had asked me to see if DDT, DDE or Dieldrin had any effect on the enzyme I was studying. In a week I was able to answer no, they did not. I had no idea that environmentalists had seized on my enzyme, carbonic anhydrase, as the cause of egg-shell thinning in raptors due to inhibition by DDE. I had not read Rachel Carson's 1962 book, *Silent Spring*, but I read it before publishing my paper and added a concluding paragraph stating that my work merely proved that the mechanism of egg-shell thinning was incorrect, not that DDE did not cause egg-shell thinning. I was not allowed to retain that paragraph and I became the hero of industry. In horror, I canceled my industrial interviews and applied to The Evergreen State College (TESC) in Olympia, Washington, a new college about to open in the fall of 1971. They responded that all positions were already filled. I called my undergraduate thesis advisor from Harvey Mudd College for advice and by an unbelievable turn of events that day got a one-year visiting appointment to the HMC faculty to replace my former advisor while he was on Sabbatical. The position was to start in August of 1971. Ann quit her research position at the University of Washington hospital and helped me rush to complete my PhD and then move to Claremont, California. By December of 1971, I held a tenure-track appointment at HMC but still pursued a position at Evergreen. When my letters went unanswered, I flew up to Seattle on a steelhead fishing trip and spent two days at Evergreen giving talks and meeting with the deans. Still no answer. Ann and I decided that we

could not live in Southern California and that she could once again do research at the U of W while I sought work. I gave notice and as I left the dean of faculty's office, my chairman met me to say that Evergreen was on the phone. I was to be the last of 25 faculty hired from a pool of 10,000 applicants. Years later, on a joint visit to Kit Scates's home I learned from Dr. Ron Peterson that the entire Biology Department at the University of Tennessee had applied to move in mass to Evergreen to become the biology department there.

Arriving at Evergreen, the ornithologist, Dr. Steve Herman, was looking for my head on a plate. And as a last-second hire, the faculty teams had already been formed and there was no place for me. The labs were not yet finished. I was assigned to the individual contract pool, meaning that students came to me with proposals that I could accept or reject. Several students needed to learn chemistry but half a dozen students, including the wife of the provost, came to me wanting to study mushrooms, ethnomycology and ethnopharmacology. I was a novice, but the only person on the faculty who knew anything at all about mushrooms, so I took them on, and my transition began. I was about to learn more about women in mycology.

Nancy Smith Weber and Kit Scates 1990 by Harley Barnhart

Margaret McKenny was born in Olympia, Washington Territory, on April 17, 1885. In 1913 the first Montessori School in Olympia was founded and Margaret joined as a teacher, eventually running the school out of her purpose-built home until 1919. In the late 1920s she moved to Groton Massachusetts, joined the Boston Mycological Club and became secretary of the New York Mycological Society. In 1929, she published *Mushrooms of Field and Wood* followed by 13 flower and garden books starting in 1936 and culminating in 1968. She had returned to her old home in Olympia in 1943 where she launched the Olympia Audubon Society and helped save Priest Point Park from logging. She involved her birders in mushroom pursuits and helped support herself by picking Chanterelles and marketing them to New York restaurants. In 1962, with Dr. Daniel Stuntz, she published *The Savory Wild Mushroom*. Margaret died August 4, 1969, having established an annual fall mushroom show put on by the Olympia Audubon Society.

So it was that in October of 1972, I took my small flock of students downtown to help Nancy Weber's father, Dr. Alexander H. Smith, and Kit Scates, an English teacher from Post Falls, Idaho set up the annual mushroom show. Catherine "Kit" (Belser) Scates Barnhart was born in about 1922 in Columbia South Carolina, married Robert Scates in 1941, graduated with honors from the University of South Carolina 1942 and then followed her husband to Muskogee, Oklahoma where she taught grade school. During WWII when Robert was away at war, she took some graduate courses and taught physical education. After the war, they moved to Minnesota where Robert obtained a dental degree and then to Coeur d'Alene Idaho where she initially taught English in the High School and later English and Physical Education at North Idaho Junior College. She earned her Master of Education from the University of Idaho in 1961. She caught the mushrooming bug in 1960 and was frustrated at the limited resources for mushroom identification. A few years later she learned that Dr. Alexander Smith was often in summer residence at the Priest River Experimental Forest. As Nancy Weber told it to me, Kit traveled North to meet Alex, bringing a carload of mushrooms with her. It had been a very dry season and Alex was amazed at what she had found. He helped her with identifications, and she asked what genus she should study. He pointed her to the genus *Ramaria*, which became a life-long passion for her. Alex and his mycologist wife, Helen (Smith) Smith became life-long friends. Helen specialized in *Lepiota.* Not long after, the North American Mycological Association was formed, and Kit joined. Soon she was Education Committee chair and served many terms as either NAMA first or second vice president, trading back and forth with another female South Carolinian mycologist, Allein Stanley. After our meeting in 1972, I immediate-

ly became a protégé of Kit's. She began teaching me mushroom photography, coming to Olympia to hunt mushrooms with me, and inviting me to her home in Post Falls, Idaho to hunt there as well. In 1973 she convinced Dr. Stuntz at the University of Washington that they needed to start an organization that she named the Pacific Northwest Key Council. She combed the local mushroom clubs for dedicated members and invited them to meet for three days each spring, each person to develop their own key. I was invited in 1974 and was accepted as a photographer for the group. I did not even know how to use a microscope. In the Key Council, I got to know and mushroom with the marvelous women like Reynaldine Sandahl who had been part of Margaret McKenny's inner circle of mushroomers and as they passed on, I was offered the chance to buy their mushroom book collections. In 1975, Kit got me and another of her recruits, Judy Roger, to join NAMA. I gained yet another mushrooming companion. Judy lived then near Ocean Shores on the Washington Coast and later near Estacada in Oregon. I miss driving to forays with Judy who passed just a few years ago. Meanwhile, I became active in the NAMA Toxicology Committee because of Kit. I was introduced to Orson and Hope Miller and would later get to know many of the fabulous women like Cathy Cripps and Linnea Gilman who trained under Orson and were dear friends of Hope. On one memorable foray with the South Idaho Mycological Association, held in McCall, Idaho, I was foray mycologist. Orson and Hope, of course, were there since by then Orson had retired and lived full time in McCall. Cathy Cripps was there as well, and Cathy and I were able to go out for an entire day together. I learned so much from her. She is a truly modest and wonderful person married to a truly great husband. I was embarrassed to be "Foray Mycologist" in their presence. Years later at a NAMA foray in McCall, Cathy Cripps was foray mycologist and I bet her a case of beer that a pure lemon yellow *Russula* was *Russula xerampelina.* When the *Russula* expert arrived, another Orson Miller graduate, I won. I never asked to collect because normally she was right, and I only challenged her that one time. She is one of my favorite people.

Back at Evergreen, I spent the summer of 1973 designing the soon to be chemistry lab spaces and purchasing the analytical equipment for a state-of-the-art analytical laboratory. Steve Herman and I had planned an 8-quarter long program that we titled The Ecology and Chemistry of Pollution. It was to be full time for the students (16 credits per quarter, total immersion) and was to start with a study of a Douglas fir tussock moth invasion in the Blue Mountains of Northeastern Oregon and to try and block a proposed use of DDT to control the invasion. Soon we were national news and had undergraduate students flying to Washington to testify at the cabinet level while Steve and I gave U.S. Senate committee testimony (me on the chemistry and Steve on the ecology of DDT). Forest Service scientists assisted us surreptitiously, in fear of losing their jobs. Russell Train, then head of the EPA came to Evergreen to meet with the students first to view our work and later to apologize for having had to cave and approve the use of DDT. The EPA was new, having been formed by Richard Nixon in 1970. However, a Republican Congress made it clear that either the EPA would approve the spray or be eliminated. Southern Senators, the Washington State Department of Agriculture, the State of Hawaii, and the City of Tacoma were all trying to get us fired. Republican governor Daniel Evans saved us. Russell Train set aside over 100,000 acres to be left un-

Nancy Weber 1983 by L. Gillman

sprayed and provided the funding for us to send a group of our students to the field to study for the first time the effects of DDT on a forest ecosystem. Other student groups of ours had secured National Science Foundation funding to study the effects of heavy metals from the Asarco smelter in Tacoma, WA; the effects of PCBs on marine Ecosystems; the effects of fluoride from aluminum smelters along the Colombia River; the effects of agriculture on the Chehalis River System (Washington State Fish and Game Funding); and the effects of heavy metals near Idaho lead mines. All these projects led to breakthrough publications. The DDT spray happened in the summer of 1974. Our final report was published in the fall of 1975. The U.S. Fish and Wildlife Service used our data to finally ban U.S. use of DDT. Now we see white pelicans again in the mid-west, brown pelicans on the coast, Osprey and Bald Eagles along our rivers. Rachel Carson, had she survived long enough, would have been proud.

In the fall of 1975, I was once again assigned to the individual contract pool. Paul Stamets and Jeremy Bigwood became the core of a small group of students wanting to learn about mushrooms. Jonathan Ott wanted to study the chemistry and ethnobotany of Amanita muscaria. From the three of them, I learned of the existence of hallucinogenic mushrooms and spent the next 10 years researching their chemistry. In the spring of 1976, the students organized the first of what would be 10 years of international conferences on hallucinogenic mushrooms, through which I met R. Gordon Wasson, Albert Hofmann, Andrew Weil and many others. Gary Lincoff always came, as did Kit. Kit, Paul Stamets and I soon were teaching annual week-long mushroom classes in the field, every fall just before the start of Evergreen classes. At one of the early conferences on Orcas Island, Paul Stamets wanted to look up his very influential High School chemistry teacher, Miss Berdan who had retired to Orcas Island. I came along to meet her. Due to family moves, I had attended three different High Schools, starting chemistry at Moses Lake High School but transferring to Mount Rainier High School in South Seattle 3/4 of the way through the first semester of my Sophomore year. My last two years were at Chief Sealth High School in West Seattle. Within 2 weeks, the Mount Rainier chemistry teacher, whose name I had long forgotten, had given me keys to the school and the chemistry stockroom so that I could come in week-ends and evenings to practice chemistry. She taught me to synthesize esters, the fragrant chemicals that are so important to the odor of various fruits. She was Miss Berdan! Paul worked with me full time for four years and we talk regularly to this day. Paul Stamets became Kit's protégé as well.

I started to learn how to use a microscope but never have mastered microscopy. Instead Paul learned to use the new college scanning electron microscope and Alex Smith would often visit since he had no access to such a machine at the University of Michigan. I began to follow Nany Smith Weber's work. Then in 1988, Nancy followed her husband, Jim, to Corvallis, Oregon where in 1990 she began her work with the Oregon State Department of Forest Service. Kit promptly recruited Nancy into the Key Council and so we finally met after hearing of her for years from her parents Alex and Helen Smith. I got to spend one entire memorable day with Nancy, just the two of us, in the Blue mountains. It was a Key Council Foray and Nancy was the foray mycologist.

Jim died many years ago and Nancy was devastated. I would go to Corvallis to see her. In her later years, when travel was hard for her, she started a detailed study of the fungi around her house. I was impressed by her detail and have tried to model her work on my own place. I will miss her, as will many.

I have had the pleasure of starting several wonderful women on their pursuit of mycology, even though I was only allowed to teach mycology three times before retiring after 30 years at TESC. The first was a real surprise to me. She was Bitty Roy, a student who simply took one four quarter-hour mushroom identification course (no labs and no field work, just me as a talking head lecturer) and who I am embarrassed to say I had forgotten until I was a guest in her home nearly 20 years ago when I was giving a talk to the Cascade Mycological Society. She is Dr. Bitty Roy, recently retired from the University of Oregon and now free to do endless mycological field work. She is simply inspirational. In my final year at Evergreen, I was allowed to teach a year-long program with Dr. Paul Przybylowicz. The program was "The Fungal Kingdom" and was a full-time immersion program. Dr. Nicole Hynson, now at the University of Hawaii, Manoa, was one very inspiring graduate of that program. Another was Dr. Noelle Machnicki. A third was forest service researcher and now Key Council Vice President, Helen Lau. Kit also brought many inspirational women into the

Key Council including Oluna Ceska, Lorelei Norvell and Michelle Seidl who work as professionals as well as Alissa Allen, Marie Bailey, Sara Clark, Margaret Dilly, Bonnie Ecker, Sharmin Gamiet, Crystal Goetz, Dorothy Henderson, Nettie Laycock, Agnes Sieger, Sally Tucker Jones, Anne Leathem, Janet Lindgren, Christine Roberts, Lee Whitford and many more as inspirational club members, past and present. New Key Council women include Shannon Adams, Anna Bazzicalupo, Leah Bendlin, Erica Cline, Susan Holmes and Emma Harrower. NAMA, too, has a host of inspirational women like Else Vellinga at U.C. Berkeley, Vera Evenson at the Denver Botanical Gardens and many more. While Kit's job is done and mine is ending, Cathy Cripps is still turning out inspiring new mycologists like Kate Mohatt who works for the U.S. Forest Service in Girdwood Alaska.

I vividly remember the very last of the annual Breitenbush Hallucinogenic Mushroom Conferences. It was about 1985. Kit desperately wanted to experience hallucinogenic mushrooms. So did I. I stopped along the Evergreen Parkway and picked just over 200 *Psilocybe semilanceata* mushrooms. Then on the last night of the conference, Gary Lincoff, Linnea Gilman (Colorado mycologist and student of Orson Miller's), Kit Scates and I met just after dinner and just before the talk by Terrance McKenna. The fantastic, dearly departed Maggie Rogers, cofounder of *Mushroom the Journal*, was our safety and observer. We each took 15 mushrooms. Soon Gary and Linnea were nicely bemushroomed and headed of for the talk. Kit and I were unaffected. Kit and I took 30 more mushrooms each. We waited. No effect. So, we took 30 more each. Still no effect. Kit, Maggie and I went to the lecture where I consumed several *Psilocybe cyanescens* mushrooms that were being passed around. On leaving I consumed a handful *Psilocybe cubensis* as I walked Kit and Maggie back to their cabin. Kit and I were very disappointed at not having experienced anything. For me, that came an hour or so later when I turned in for the night.

In later years, after Kit had passed, Maggie became the greatest mushrooming companion one could ever want. We often traveled to forays together and would spend the day together, me filling my basket to overflowing with edibles and other macrofungi, she filling her basket with the tiniest things. I would photograph the mushrooms and Maggie would photograph the people. Maggie did not identify mushrooms. She loved the people. I have her, Kit and Linnea to thank for most of the accompanying photographs.

I so sorely miss Kit Scates Barnhart who got me started and was my constant companion until Harley Barnhart became available in 1985. As Maggie Rogers told the story to me, when Kit heard that Harley's first wife had died of cancer, Kit divorced her conservative Idaho politician husband, Robert Scates, and drove to Florida to snatch up Harley before someone else could. I also greatly miss Hope Miller who gave me all of Orson's literature when I was writing *Ascomycete Fungi of North America*. Without Maggie Rogers, Judy Roger and now Nancy Smith Weber I really feel the void. During the restless night after I first learned of Nancy's passing, I thought of these women as human embodiments of mycologist Suzanne Simard's "Mother Trees". Sharing with and interconnecting the rest of us like Suzanne's mother trees, sharing and nurturing all their surrounding environment via mushroom mycelia. Yet I know that I am still surrounded by many fantastic women of mycology with new ones arising every year, eager to be nurtured and to be the mother trees for others yet to come.

Mt. Hood National Forest, OR. OMS spring foray, May 1991 by Steve Trudell

IN SEARCH OF MYCOTOPIA: *CITIZEN SCIENCE, FUNGI FANATICS, AND THE UNTAPPED POTENTIAL OF MUSHROOMS*

Review by Dianna Smith

In Search of Mycotopia: ***Citizen Science, Fungi Fanatics, and the Untapped Potential of Mushrooms***
Doug Bierend
Chelsea Green Publishing
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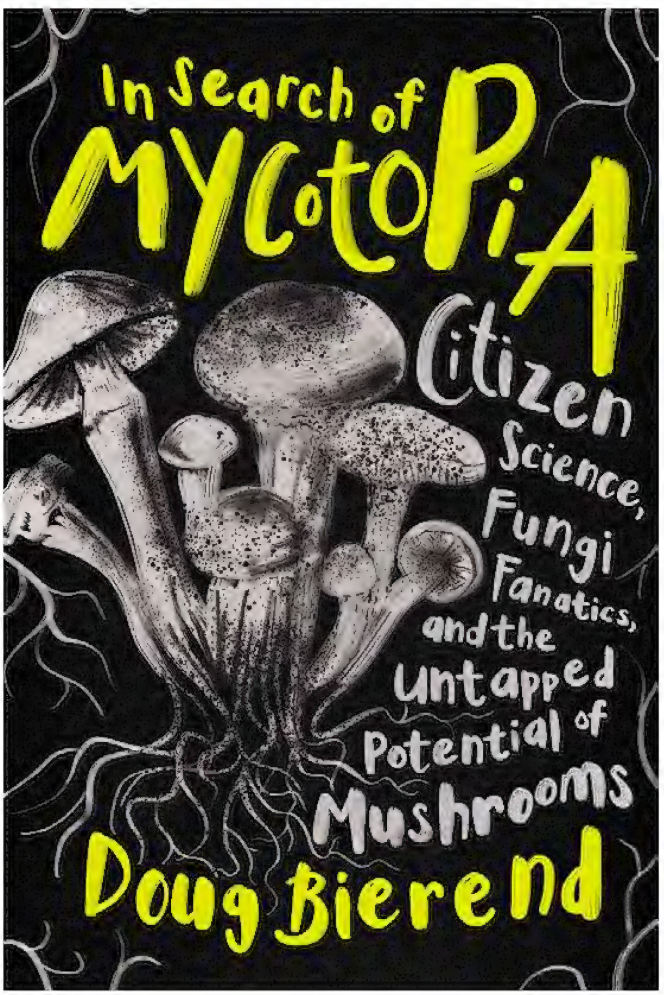

Most mycophiles are aware that there a growing number of younger folks entering mycology who have been inspired, especially by the writings and TED Talks of world-renowned myco-evangelist, Paul Stamets. The charismatic Pied Piper of practical mycology has had a similar effect on many of us 'old timers' as well as on the one to three generations of young idealists born after ours. Few of us are unmoved by the extraordinary accomplishments of the founder of FungiPerfecti. The closing slide of his presentations reveal an image of branching mycelium reaching out from the earth's organisms into the cosmos presumably connecting every planet, star and galaxy within a complex, integrated and unified web of communication. Seeing it, elicits rounds of heartfelt applause. Unsurprisingly, nature journalist Doug Bierend was also captivated by Stamets' Ted talks.

Bierend's initial contact with adherents of mycology committed to effecting solutions to our ongoing and worsening environmental problems, though, was through meeting entrepreneur mushroom cultivator, Olga Tsogas. She is founder of Smugtown Mushrooms in Rochester, N.Y. and collaborator of Mycelium Underground. The latter is nation-wide community of mostly women, one of a growing number of informal social communities with unconventional names like Decolonize Fungi, Female and Fungi, Fungi for the People, and the Radical Mycology Convergence, among other anti-establishment monikers. Olga and friends introduced the author to woodland macro fungi, their myriad morphologies and modes of survival. That initial experience led Bierend and his wife to make contact with similarly infatuated enthusiasts. He set out to learn why they are engaged in promoting widespread knowledge about the hidden world of fungi, and encouraging each other to learn cultivation techniques, and conducting experiments designed to effect solutions to environmental problems. His emergent passion for mycology and curiosity about what drives the friendly, diverse and idiosyncratic folks involved in these endeavors, was his reason for writing his first book. It is about principally young amateur mycologists, their motivations and beliefs for

propagating widespread commitment to 'saving the earth' with fungi.

Bierend interviewed many individuals with names familiar to members of established mushroom organizations associated with NAMA, such as Alan Rockefeller, Christian Schwarz, William Padia-Brown, Tradd Cotter, Bill Sheehan, Peter McCoy and others. Some of these talented individuals are involved with the Fungal Diversity Survey (FunDis) and have been actively promoting citizen science to expedite and facilitate the documentation and collection of native fungal species. This activity involves learning how to properly observe, photograph and record fungal finds, engage in genetic sequencing, and preserving these materials along with related specimen in a university, botanical or home fungarium. The program evolved in concert with professionals and amateurs and has helped foster closer amateur ties with university mycology professionals. Mycology is unusual in being a field of science that is open to and that can benefit from the collaborative efforts of amateur amateurs working in concert with professionals. Most of the above-mentioned are also involved in propagating the message that nearly all life forms of life are dependent on the ignored fungi kingdom. Having evolved over millions of years via mutualisms with other organisms, fungi are seen as undervalued decomposers, and distributors of nutrients.

While Bierend spends a fair amount of time elucidating the ambitions that drive the above-mentioned devotees of amateur mycology, his research has exposed an uncomfortable fact that established mycological organizations have come to recognize. Most contemporary myco-advocates have limited direct connections with the major mycological associations that first sprung to life in the 1960' and 1970's. Like the some of the founders of the early mycological clubs, many of today's myco trailblazers have been fundamentally inspired to learn more about fungal lifestyles after experiencing untethered connections to life with mind-expanding psychedelic mushrooms. Some have been exposed to the myriad hobbies and activities involving fungi via the annual Telluride Fungi Festival, known for its speakers, forays, carnival-like parades, art, dye workshops, culinary workshops and its magic mushrooms. Others have caught the myco-bug from mushroom cultivators, and from myco-social activists like Peter McCoy. He has communicated with potential adherents via his books, talks and presence on social media and has organized many Radical Convergence festivals to draw in folks searching for meaningful ways to pursue a satisfying life course and the means to survive outside conventional expectations. The focus of these celebratory events is on educating participants about the potential of fungi to provide the world with tools to feed, repair and heal the earth. Organizers draw on talent within the community to introduce novices to mycology. Invited 'expert' instructors are not always well-versed in the subject. What matters to the founders is that they have spawned many communities of zealots who have been encouraged to pass on information about how fungi cooperate with other organisms. Their purpose is to promote mushroom cultivation on a local level, instruct farmers and gardeners of the benefits of soil fungi to soil biodiversity over fertilizers, inspire entrepreneurs to experiment with ways to control and eliminate waste, to remediate soils, to purify contaminated water, air, and oceans using fungi, to manufacture fungal medicines. Certainly, these are all worthy goals and activities.

These and other mushroom educational events have been formed by amateur mycologists, ecologists, cultivators, and educators devoted to promoting appreciation of the neglected world of fungi. Bierend points out that many of the folks drawn to pursuing an independent career involving fungi are or feel marginalized for being 'different'. Many are creating businesses based on cultivation of popular edibles, nutraceuticals and a plethora of fungal preparations used medicinally. The mycorrhizal lifestyle of fungi in particular has provided a generation of solution-oriented idealists and entrepreneurs with a powerful metaphor for fostering spiritual, social, economic, and environmental change. They have chosen an independent anti-capitalist path to survival that respects fungi and their own struggles to gain the respect of a society despite not having university doctoral degrees in mycology. They are generally for the democratization of mycology and medicine and applying current knowledge of the kingdom's representatives to educate and address their concerns about waste, hunger, air and water pollution, climate change incurred by oil spills and practices of big agricultural farming that destroy the diversity of formerly bioactive soils.

So why don't these younger generations care to join any of the established mycology organizations?

Some at least have issues with our ways of conducting forays. Most of the original members of mycology clubs still around are now aging gray-haired retirees - 'stuck' in our conventional and outdated preference for searching for unusual specimens, identifying them, and eating edibles. Some in the new generation are not particularly fascinated by learning scientific nomenclature or how to identify fungi that are not edible or has no known medicinal use. They object to our collecting thousands of fungi for table identification, and then throwing out duplicates and the entire lot after they've been duly recorded. Critics have a legitimate point here. More and more we are subjecting unusual finds to DNA analysis, and hopefully more clubs will consider tossing left-over fungi collections back into the forest or into compost heaps rather than into giant plastic garbage bags destined for the dump. Certainly, we do not need everyone to collect every fungus seen during a multi-day foray, given that so many of the same species are collected day after day by tens of us.

Some consider members of established mycological organizations 'old'. Presumably gray-haired middle-age and older folks lack understanding or empathy with their optimism about succeeding in their worthy multi-faceted endeavors. Personally, I feel that most folks interested in mycology - even older ones like myself - are also 'different', come from many varied backgrounds, and are unconventional. Most of us are rather liberal, support social diversity and care about humanities' often deleterious effects on our planet and its inhabitants. We are as curious, thoughtful and entranced about our connections to fungi as those in the youth myco-movement. Our love and appreciation of the fungal kingdom is what draws us all together.

I have even introduced a couple of local young enthusiasts to mycology who have gone on to establish mushroom cultivation businesses to serve the communities in the Pioneer Valley of Western MA. Thanks to them, our supermarkets now offer a wide variety of fresh locally cultivated edible fungi for sale. It is difficult work requiring having a reliably dedicated staff who will show up to maintain and grow a fledgling mushroom business. I have also taught mycology classes to wonderful well-meaning students in their twenties and thirties who have jumped on the medicinal mushroom bandwagon. I am personally not an advocate of promoting fungal medicinals for preventing or curing diseases until evidence-based testing can demonstrate they are effective beyond their unquestionable nutritional value. However, I continue to urge people of any age to explore all legitimate scientific avenues to eventually prove me misguided and 'old fashioned'. In areas of the world lacking any reliable medical resources, edible mushrooms grown on waste materials, and fungal tinctures and pills may at least provide a healthy food source and give hope to the sick.

Over the past few years, several excellent tomes have been published on the broad subject of mycology, and about the quirky people who are passionately engaged and even employed in a growing list of mushroom related activities designed to 'save the world'. Eugenia Bone, Langdon Cook and Michael Pollen, for example, have artfully explored and elucidated the underground connections of fungi and other organisms below and above the soil. They have also investigated the ideas, ideals, and dreams of its most ardent proponents from scientific, historical, social and philosophical perspectives. Free-lance nature journalist Doug Bierend brings us up to date on the social makeup, activities and philosophies that drive an expanding cadre of mainly younger devotees to act as ambassadors of mycology, and its democratization. For those who may be interested in gaining insight into amateur mycology in all of its current manifestations - from cultivation to fermentation - I highly recommend this well-written book. It is thoroughly researched and presents the reader with a sympathetic, yet reflective view of contemporary popular mycology.

BOOK REVIEWS FOR *THE MYCOPHILE*

One of NAMA's committees that remains little known to probably the bulk of the membership is the Editorial and Literature Committee, the literature function of which is coordinated by Steve Trudell. The committee has several charges in the NAMA Policy Manual but an important one is to provide reviews of books, DVD's, apps, software programs, and the like for publication in The Mycophile. If you learn of a new book (or DVD or whatever) that you feel would be of interest to other NAMA members, or if you would like to write a review, please contact Steve (mycecol@uw.edu) so that he can coordinate acquisition of the items and submission of reviews to the newsletter.

FRUITFUL CONNECTIONS

Compiled by Karen Monger

Near the end of 2020, I solicited NAMA members for some mushroom-centric experiences to share with other members. I was looking for tales about myco-friendships, or for stories about how mushrooms influenced relationships. I am happy to share the results here, and would always welcome more contributions such as these.

Dog Bonding

Michael Dearing

You asked for stories of people bonding in the context of mushrooming. Here's a short tale of people-dog bonding in the context, extracted from an email reply of mine to a statement by Debbie Viess.

Very true. I once had a dog I called the mushroom dog. Not because he could find mushrooms. Because he could jump our 5ft. fence with ease and bound off into the woods and start what I called a mushroom game. He knew I would chase after him to keep him out of trouble ('they' shoot 'wild' dogs, meaning not theirs, around here). We ran willy-nilly through the woods. At some point I would stop to catch my breath, look around, and there would be an interesting or edible mushroom. I would crouch to see it better. Since my attention was obviously no longer on the dog, he showed up and tried to figure out what took my attention from him. I would collect the mushrooms and we would head back. There I could pull the monographs off the shelf, set up a spore print, and key them out. I never tried to stop him from jumping; the game was too much fun for him, and me.

On Mar 3, 2014, at 9:30 AM, Debbie wrote:

No deep knowledge is instantaneous. Get your butt outta that chair and your face away from your screen and get the heck out into the woods. Experience is the best teacher.'

How Mushrooms Saved Me

Shane Donahue

Since the early beginnings of my adult life and for many years after, I spent decades plugged into societal norms, however, the feeling of fulfillment, personal growth, and happiness started to wane. I served as a noncommissioned officer in the United States Army; after I worked as a federal employee for the Department of Veteran Affairs and the Department of Defense. I always felt as if something was missing, perhaps a deeper understanding of what the purpose of life is. After many years of punishment of my body from military service, increasing depressive episodes, and the lingering effects of PTSD, I began searching for more, something deeper than material possession and success before I completely succumbed to the struggles that so many veterans fight to stave off.

I came across a talk by a gentleman by the name of Paul Stamets, little did I know this would become my Rosetta Stone. To decipher this newly found Rosetta Stone I first took a walk in the woods of New Hampshire. As someone who lived in Hawaii for several years, I was no stranger to the beauty of nature, but something was different this time, much more profound. Suddenly I was privy to a world I had never seen before: the world of fungi. In the lonely search for a deeper understanding of myself what I saw was truly profound. A world full of life, a forest I once would have viewed as random vegetation was full of life, belonging, and economy; a community that was interconnected, facilitated through the mycelial network. I started seeing fungi everywhere; I began cataloging what I found.

I captioned one of my pictures "Follow the mycelium, it will lead you to a treasure" and in fact it led me to much more. Day after day I found myself photographing the beauty of these life-giving organisms, learning, studying. Without truly realizing what was happening, time seemed irrelevant. Instead of popping anti-depressants prescribed by a government doctor, I was popping lion's mane and turkey tail capsules. I felt the fog that had surrounded me for so many years had evaporated. I felt new.

Amidst the isolation of the COVID-19 pandemic, I found myself in the warm embrace of various mycological clubs. In the short time I have spent so far in the world of mycology I found the following: ever increasing physical health, a never-before had sense of spirituality, new friendships, knowledge, and artistic expressions in the forest and in the mycological clubs. In my opinion Fungi did exactly what it has done for millions of years: took the decay

of my previous life and recycled it into something completely new and beautiful. Fungi in fact saved me.

My Myco Experiences
Claudia Littrell

It's been only a few years since I moved to Georgia and had to make new friends. One night I woke up, depressed, lonely, and missing my hiking and foraging buddies. I decided right there to start a mushroom club so I would have buddies to forage with. It was such an innocent thought!

Facebook made it easy to create a mushroom group and adding other mushroom enthusiasts. Soon I had some GA, SC, and AL friends who were already doing cool stuff; the stuff I wanted to learn how to do.

In 2017, during a little hike in a nature preserve, I met Dr. Cornelia Cho and her husband Sam Landes. Dr. Cho asked me why I started the mushroom club and I didn't know what to say because I hadn't really thought about it. I was just following what was, somehow, laid out in front of me. She suggested "therapy??" and she hit the nail right on its head! Yes, that's exactly what it was. I just couldn't express it myself. Since then I experienced the love and common interest of people involved with mushrooms. The love for mushrooms brings people together. There isn't a day where I don't learn something new about mushrooms. I'm totally fascinated by mycology. The mycelium brings people together that otherwise would never meet.

So, in 2017, I started thinking that my little town would be perfect for having a mushroom festival and that's how the Georgia Mushroom Festival was born. We are in our 4th year now and had to change our 2020 date to the first weekend of May, 2021.

MushFest was created for all the grassroots mycologists and enthusiasts; to bring them together, exchange ideas, meet buddies that they only know from their Facebook communications and bring mushrooms to the general public. Without our special FB friends we wouldn't have a mushroom festival. We all felt a need for a grass roots community around mushrooms and for bringing knowledge of the Kingdom of Fungi to the general public. It is great to see friends who only knew each other from their Facebook interactions meet each other in person. Mushrooms just make me happy. I'm not an ID person, nor am I particularly interested in studying mushrooms, I seem to have a talent for creating events around mushrooms (surprisingly.)

So, next year, May 1, 2021, upon request, we have added an entertainment part to the Georgia Mushroom Festival called Magic Mushroom Music Jam and I'm currently working on getting the bands and other organizational matters lined up. I hope that my mushroom friends will like it. There is a lot of local interest in mushrooms now and I'm making new friends almost daily. What a life!! Mycelium is spreading.

PS: I forgot to mention that I also started a farmers market this year, but was unable to attract a mushroom grower. I had to come up with something and made mushroom pies, brought dried mushrooms and a few grow bags from my friend at Fungi Farm in AL. GOAL: Make more friends and build grassroots support for the Kingdom of Fungi.

On Meeting My Mycological Partner
Bill Bakaitis

It was at a NEMF Foray in the late 1980's in Rindge, New Hampshire. As I recall, it was one of those very warm summers to which we had yet to become accustomed, and Rindge was not quite close enough to the coast to afford much relief. I was tasked with delivering one of the major talks for the afternoon lecture series, the title of which as I remember was, *I Just Ate a Poison Mushroom: What Happens Now*. In spite of the mid-day August heat and dark subject, a large audience filled the hall. At the conclusion of the talk a group of twenty or thirty participants came to the front of the theatre to continue the discussion.

Among them was one woman who stood out. She was both lively and interested in mushrooms, particularly in learning to distinguish edible species from toxic species. This was her first foray. As I came to learn, she was not only an amateur mycologist, but also a chef, gardener, and food writer. In order to make way for the next talk in the series the poison mushroom group moved into the fresh air of outdoors and in time thinned out. Soon there were only the two of us.

Being a writer, my new-found acquaintance had previously arranged to interview the pastry chef at a nearby restaurant. She invited me to accompany her to taste his Peach Kuchen. Being a farm boy, I had no idea what a Kuchen was, but carried along by our previous discussion tagged along, and so began a relationship which was to last for a quarter century.

Her name was Leslie Land. She lived in rural Maine where she supported herself by being a chef specializing in sustainable, often French inspired,

fresh ingredients, usually direct from her home garden. Fifteen years prior, as I came to learn, she was one of the three original chefs at Alice Waters' *Chez Panisse* restaurant in Berkeley California. Now she lived alone in a one of those rustic seasonal houses which Mainers call "Camps." She carried water, split wood, and had her outhouse in a neighboring barn. Interesting, I thought. She also collected mushrooms, maintained a correspondence with Dick Homola, Maine's chief Mycologist, and in addition to writing a pioneering cookbook emphasizing sustainable ingredients, also had a weekly syndicated food column. Very interesting!

Back at the foray, continuing our discussions, I realized that she and Roger Phillips had the same publisher. I introduced them to one another and after dinner at the university dining hall, Roger and his wife Nicky Foy invited us to share drinks with them under the trees. The evening was warm, Roger's vodka was cold, poured directly over ice. The talk covered all manner of the world, natural and unnatural. It went on until dawn, when we all staggered back to our university prepared breakfast and the sign-up for the days walks. By this time the literary seeds had been sown. They took root and served us all well for decades.

Leslie was about to enter a competition for a funded writing project and she asked me to join in. It was to be a complete field-and-forest-to-table guide book for the food industry. We worked on that project for a year, she in Maine and I in the Hudson Valley where I had a home and teaching job. I remember the organization sponsoring the competition as CAREF, and that in the end we did not win, coming in runner-up or something like that. I did not know at the time, but now, in writing about all of this, and based upon a few references found on-line, think CAREF was likely part of the Julia Childs Foundation.

Leslie's endeavors with Roger came out much better. During the evenings discussions Roger became enchanted with Leslie's description of her life in rural Maine. The comparisons of their respective gardens, his in urban London and hers in rural New England, came quickly to the fore and soon a plan was hatched for them to co-author *The Three Thousand Mile Garden*, a book describing and chronicling the two gardens. The book was a success, reprinted twice, and subsequently led to the PBS/BBC six-part television series of the same name.

Leslie and I took up with one another, joined lives, and for the next twenty-some years maintained gardens and collected mushrooms both along mid-coast Maine and the mid-Hudson/Catskill area of New York State. Our lives flourished in that synergy, much of it recorded by her in her Blog, *In Kitchen and Garden*, where Mushroomers will find pages and pages devoted to the growing, collecting and cooking of mushrooms. Gardeners and Cooks will find equivalent delights. It was a life of joy and abundance. Have a look: Leslie Land - in Kitchen and Garden and all around the House And all of it because of a talk on Poison Mushrooms delivered to an avid group of amateur mycologists away at a distant Foray during the swelter of an August heat wave. How cool is that?

Leslie too would have written about this foray, but she died in 2013 of metastasized breast cancer. Her collected writings are held in the Culinary Collection of *The Schlesinger Library of the Radcliffe Institute for Advanced Study at Harvard University*. Roger and Nicky continue their life in London, maintaining both their inspiring gardens and their gorgeous publications. The three of us remain in touch, often through mutual friends. A single episode of the Three Thousand Mile Garden TV program, the second, springtime edition (with scant reference to mushrooms) is available on line at The 3,000 Mile Garden - YouTube. The entire six-part series is held at both the Schlesinger and Cushing Public Library in Maine. I continue to do talks and from time to time write about aspects of amateur mycology for inclusion in various newsletters and websites such as Dianna Smith's Fungi Kingdom: Bill Bakaitis| FungiKingdom.net/Dianna Smith

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Martha and the Morels

Steve King

The first I time I laid eyes on her was at Beatty Memorial Hospital, a state-run mental health facility in northwest Indiana not far from Lake Michigan. It was 1976. She was a recreational therapist and I was a janitor working my way through Valparaiso Law School.

I would see her about the grounds and found her attractive... but we never had the opportunity to talk.

That chance came five years later at a bar in Indianapolis, where, as destiny would have it, we were both living and working. It was a Friday night "happy hour." She was with a group of friends from work. When she passed by me I stopped her and politely opened with "Didn't you used to work at Beatty?" "Yes," she said, but cautiously, her mind's eye rapidly cycling through the mental patients in her past. I think I tried to explain I had worked there

as well, but the doubt clouds naturally hovered. She escaped to her table of friends who sized me up and convinced her to return for a chat. Her name was Martha... it went well, and I got her phone number.

It was April in Indiana. So that weekend I took a walk around my heavily-wooded apartment complex named "Walden" to see if it just might yield some morel mushrooms. To this day, it is the only time I have ever had the need to break out grocery-store size paper bags to handle the bounty. My city-slicker neighbors had no clue what that spongy fungi was growing right up to their shaded patios.

That is a general ignorance that warrants the benign neglect of shroomers. In fact, when neophytes say to me "It would just be my luck to get a poisonous one" I nod gravely and vaguely acknowledge "Yes, there is always that risk." But I digress.

Ah, so I called Martha and we met for a proper lunch date in downtown Indy. There, I told her of my morel pursuits. She was intrigued-or at least seemed so-and I invited her over to Walden to join the hunt. She accepted and came. We enjoyed an easy and fruitful search on a sun-splashed evening that spring. We cooked some up back at my apartment and she seemed to enjoy them. Morels pair nicely with wine, of course... and yes, square well with springtime romance.

Two years later we were married. Thirty-seven years later we still are. Every spring we make several forays for morels and savor the reflection of our earliest days together.

It turns out, though, that while Martha loves the hunt she does not care for the delicacy.

"It's OK," she offers, "More for you." Yes, I married myco-well.

About the time our son was getting interested in girls I told him his parents' first real date was a mushroom hunt. Still a bit callow, he said flatly, "That was dumb." Last year he married a fine woman in a woodland ceremony. Every spring since they found each other they have been right there with us for those springtime walks in the woods in search of the mystical morel. They too have married myco-well.

Mushrooms: The Pandemic Opens New Worlds

Barbara F. Brandt, on behalf of Edythe

COVID-19 has changed our lives in immeasurable ways that we could not have imagined less than a year ago. When Lifetime Fitness was forced to temporarily close its doors for months, 7-year old Edythe's mom and dad shifted their fitness routine to long walks in the Wake County, North Carolina's extensive park system. A whole new world, obsession, and learning opened up before Edythe's eyes: mushrooms. Edythe's appetite for learning about fungi friends is voracious: Google searches, checking out websites, new books, photographing, and courses. Her delight ranges from kicking a puffball and squealing to discovering the mushroom wonders in neighbor's yards.

Edythe shares what she is learning with her second grade, online classmates whom she dearly misses seeing everyday this year. When her teacher asked the class to share their talents, Edythe responded hers is "finding and photographing mushrooms". In the talent showcase, Edythe was asked to present her photo gallery first.

To feed her passion and continued learning, Edythe's family recently became members of the North American Mycological Association and will give her Gary Lincoff's *Audubon Guide to North American Mushrooms*, recommended by Bruch Reed, to her for Christmas. In a big way, mushrooms are a life line of joy and diversion for Edythe's family during this incredibly stressful time, and perhaps a lifetime of study.

Edythe finds some fungi!